



Academic Year <u>Year; 10</u>	Content. Unit title and brief outline of content.	Skills taught in each unit.	Assessment – what knowledge and skills will be assessed and how?
Rationale	GCSE Paper 2 is taught. Pupils start GCSE modules in year 9 to understand how programming is contrasted. Exam Paper 2 is taught first as this involves the logistics of programming where pupils are lead into the start of year 11, where pupils create a programming project as part of NEA. Exam paper 2 is also the paper that is the toughest for pupils to tackle therefore it allows the content to be covered and consolidated. (OCR J277)		
Autumn A	2.2 Programming fundamentals – <input type="checkbox"/> The use of variables, constants, operators, inputs, outputs and assignments <input type="checkbox"/> The use of the three basic programming constructs used to control the flow of a program: <ul style="list-style-type: none"> o Sequence o Selection o Iteration (count- and condition-controlled loops) <input type="checkbox"/> The common arithmetic operators <input type="checkbox"/> The common Boolean operators AND, OR and NOT	Using programming constructs Coding Use of Boolean operators Problem Solving	End of module test Observation of class tasks to see how Boolean operators are used and constructs are used in a python program.
Autumn B	2.2 Programming fundamentals – Data Types The use of data types: <ul style="list-style-type: none"> o Integer o Real o Boolean o Character and string o Casting 	Coding Problem Solving Algorithmic Thinking	Test on how data types are used and changed in python program. Theory test on keywords



Spring A	2.2 Programming fundamentals – Additional programming techniques <input type="checkbox"/> The use of basic string manipulation <input type="checkbox"/> The use of basic file handling operations: <ul style="list-style-type: none"> ○ Open ○ Read ○ Write ○ Close 	Being able to file handle in python Problem solving	Observation of string manipulation and file handing is used in python program.
Spring B	2.2 Programming fundamentals – Additional programming techniques <input type="checkbox"/> The use of records to store data <input type="checkbox"/> The use of SQL to search for data <input type="checkbox"/> The use of arrays (or equivalent) when solving problems, including both one-dimensional and two-dimensional arrays <input type="checkbox"/> How to use sub programs (functions and procedures) to produce structured code <input type="checkbox"/> Random number generation	Query skills in database Creating Lists in Python Problem Solving	Observing the use of SQL and arrays to store records. End of module test
Summer A	2.3 Producing robust programs Defensive design <input type="checkbox"/> Defensive design considerations: <ul style="list-style-type: none"> ○ Anticipating misuse ○ Authentication <input type="checkbox"/> Input validation <input type="checkbox"/> Maintainability: <ul style="list-style-type: none"> ○ Use of sub programs ○ Naming conventions ○ Indentation ○ Commenting 	Validation skills Coding	End of module test. Python program created to show skills are used.



<p>Summer B</p>	<p>2.3 Producing robust programs</p> <p>Testing</p> <ul style="list-style-type: none"> <input type="checkbox"/> The purpose of testing <input type="checkbox"/> Types of testing: <ul style="list-style-type: none"> ○ Iterative ○ Final/terminal <input type="checkbox"/> Identify syntax and logic errors <input type="checkbox"/> Selecting and using suitable test data: <ul style="list-style-type: none"> ○ Normal ○ Boundary ○ Invalid ○ Erroneous <input type="checkbox"/> Refining algorithms <p>2.4 Boolean Logic</p> <ul style="list-style-type: none"> <input type="checkbox"/> Simple logic diagrams using the operators AND, OR and NOT <input type="checkbox"/> Truth tables <input type="checkbox"/> Combining Boolean operators using AND, OR and NOT <input type="checkbox"/> Applying logical operators in truth tables to solve problems 	<p>Testing</p> <p>Use of Boolean Logic</p> <p>Searching and Sorting</p> <p>Coding</p> <p>Problem Solving</p>	<p>Testing on how errors can be solved. Use of how Boolean is used.</p> <p>End of module test.</p>
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Academic Year <u>Year 11</u>	Content and rationale. Unit title and brief outline of content.	Skills taught in each unit.	Assessment – how will the knowledge and skills be assessed?
Rationale	Pupils then work on their programming NEA project (20 hours). This is to allow the programming element as well as the NEA, which does not count towards the final mark to be complete. In year 11 pupils start to cover Exam Paper 2. This exam paper helps pupils to be prepared for BTEC Level 3 IT course.(OCR J276)		
Autumn A	Programming project NEA (20 Hours to complete)	Abstraction Decomposition Algorithmic thinking Evaluate Coding	Completed task – NEA Skills in Python seen used
Autumn B	1.1 System Architecture 1.2 Memory 1.3 Storage	Understanding how Hardware and Software work Evaluation Problem Solving	End of module tests using exam questions
Spring A	1.4 Wired and wireless networks 1.5 Network topologies, Protocols and Layers 1.6 1.6 System Security	Understanding how Hardware and Software work Evaluation Problem Solving	End of module tests using exam questions
Spring B	1.7 System Software 1.8 Ethical, Legal, Environmental concerns Revision for final exams	Understanding how Hardware and Software work Evaluation Problem Solving	End of module tests using exam questions
Summer term: End of KS readiness for the 6th form	Key Knowledge studied at KS4 that will be useful for the 6th form	Summary of the main core skills taught at KS4 that can be reactivated at KS5	



<p>Pupils are provided with a transition booklet which details information about the BTEC IT Level 3 course as well provide homework activates to allow pupils to research topics they will cover in KS5.</p>	<p>IT skills developed from KS4 will allow pupils to be well prepared and move forward into BTEC IT. Modules covered at KS5 will include spreadsheet/Database and how Social Media is used in Business. Students who study Computer Science at KS4 will find Unit 1 within the course easier to tackle as elements from the KS4 curriculum reappear, but with a step up of a level 3 standard.</p>	<p>Being able to problem solve is a key skill, which will be required for KS5. Being organised and planning ahead will support the coursework element of the course. If pupils have studied Business Studies at KS4 skills can be transferred into the BTEC IT course as the first coursework will focus on the use of IT with Business's.</p>	
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